Renewable and Sustainable Energy Reviews 15 (2011) 1335–1342

Contents lists available at ScienceDirect

Renewable and Sustainable Energy Reviews

journal homepage: www.elsevier.com/locate/rser

Tourists' attitudes for selecting accommodation with investments in renewable energy and energy saving systems

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ARTICLE INFO

Article history:
Received 29 July 2010
Accepted 14 October 2010

Keywords:
Energy saving
Hotels
Climatic change
Public attitudes
Renewable energy
Sustainable tourism
Willingness to pay
Willingness to use

ABSTRACT

This paper aims at providing useful insights into tourists' preferences for choosing to stay in hotels equipped with Energy Saving Installations (ESI) and Renewable Energy Sources (RES). Factors related to these decisions were studied through 2308 face to face interviews taken at the departure terminals of the two international airports of Crete, Greece. Results show that 86% of the respondents would prefer to stay in hotels equipped with ESI, and 87% in hotels with RES, rather than staying in hotels of identical quality which do not have either ESI or RES. Furthermore, the percentages of respondents who would be willing to pay fee surcharges for a hotel equipped with ESI or RES are 75 and 77%, respectively, as compared to hotels of identical quality which do not have either ESI or RES. Tourists from countries with high energy awareness, prove to be more willing to choose to stay at and pay for hotels with ESI and RES.

Contents

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doi:10.1016/j.rser.2010.10.009

1. Introduction

Today it is widely understood that impacts of climate change on the tourism sector will steadily intensify particularly under higher global Green House Gas (GHG) emission scenarios. On the other hand, GHG from the sectors of transport, accommodation and other tourism activities are estimated to account for 46% of the total up to date emissions [1]. A transition to a less source-intensive tourism is inevitable, but there is very little debate about what is meant by this [2]. The Tourism industry is in obvious need of information on what climate change is, how it is linked to rational energy use, energy saving and renewable energy sources [3].

The "Agenda 21 for Tourism and Travel Industry" developed by the World Travel and Tourism Council in cooperation with the World Tourism Organization addresses resource management and energy use as one of the major issues [4]. This was also acknowledged in the Second International Conference on Climate Change and Tourism in Davos Switzerland (1–3 October 2008) about the tough challenges and major opportunities of climate change and mitigation actions in the tourism sector [5].

Hotel energy efficiency constitutes a vital part of the eco-efficiency in tourist operations [6]. Although the tourist industry is a high energy consumer, very little work has been published on energy saving and renewables in terms of stakeholders' attitudes on the topic. One of the ultimate goals in sustainable development is to foster responsible environmental/energy behavior [7] not only for tourism operators, but also for tourists themselves.

Dalton et al. [8] found that Australian tourists would prefer environmentally friendly accommodation and renewable energy supplies, while Becken [3] showed that tourists were willing to pay a reasonable amount of money for certain environmental measures to be taken in hotels.

The scope of the research was to investigate tourists' preferences in selecting a hotel in terms of its energy profile. Also to find out whether hotels with ESI and RES are ranked higher by tourists when it comes to choosing their accommodation.

This research took place in Crete. Crete is a Mediterranean island of 8368 km^2, its permanent population is 601,263 inhabitants and it hosts 3 million tourists annually. The hotel sector is a high contributor to the Greek GDP comprising 8689 hotel units, with a total of 339,540 rooms and 644,898 beds. The island of Crete has the largest Greek tourist capacity, compared to other Greek regions, with 1381 hotels, 66,411 rooms and 124,784 beds [9]. Due to the importance of tourism for economic growth and the high number of hotels in Crete, ESI and RES attitudes of tourists at Cretan hotels were studied under the auspices of ENERCYREGIO Interreg IIIC project [10]. Results from this work provide information to hotel managers, tourism organizations and associations, as well as to policy makers for formulating and promoting ESI and RES investment programs, awareness, information campaigns and policy actions. Since the same tourists that took part in this research could visit several destinations world wide, findings of this research would be of interests to hotel managers from other countries.

2. Research methodology

This section provides a research methodology with a description of the questionnaire, survey implementation and data analysis.

2.1. Questionnaire design

The first questionnaire, out of three was designed to inquire into tourists' willingness to use (WTU) and willingness to pay (WTP) for hotels that have invested in Renewable Energy Sources (Questionnaire 1: version RES). The second questionnaire was designed to inquire into WTU and WTP for hotels that have invested in Energy Saving (Questionnaire 2: version ESI). The third questionnaire was a synthesis of the previous two, excluding any common questions (Questionnaire 3: version RES and ESI), inquiring into WTU and WTP. With these versions we wanted to select responses first separately on renewables and then on the energy saving counterpart, and last collectively on how tourists would respond to both aspects: RES and ESI. The interviews were conducted in six European languages.

All questionnaires consisted of 4 parts. The first part asked info about the accommodation; such as the hotel name, the hotel quality category (number of stars), the amount of money they paid per night, the duration of their stay and the annual number of nights spent in hotels for business and holidays. Moreover, some information was asked about the municipality where the hotel was located.

The second part included questions about habits and opinions of the respondents, which illustrated their awareness and information level of attitudes and technologies regarding energy saving and/or renewable energy. It also included questions about actions and appliances on ESI and RES, that respondents practice at home and during their stay in the hotel.

Next, the interview commenced with a short information session. This aimed not only at informing respondents about the requirements of ENERCYREGIO Interreg IIIC project [10], but also to make sure that respondents had the basic knowledge to understand the questions posed next. This involved some pictorial assistance provided by the interviewer, in two different cards, concerning ESI and RES, respectively.

The information on energy saving was based on a card showing energy saving systems that can be installed in a hotel and verbal description provided by the interviewers. The card included: a photo of energy saving lamps, a schematic cut of a double glass window, an energy class "A" air-conditioner of inverter technology, accompanied by a card of the "A" to "G" energy classes of air-conditioning units. Some additional pictures represented a room key card placed in the socket, a technician undertaking maintenance to an air-conditioner, a schematic cut of an insulated roof and a house facade with tents. For the information on renewable energy a different card was prepared with photos and the interviewers explained that these systems were suitable for a hotel. The card included: a photo of water solar heaters, a photovoltaic system, a schematic cut of shallow (solar) geothermy and a photo of a building using it. Finally, two schematic cuts of a bioclimatic buildings were explained.

The third part was designed to inquire WTU and WTP. WTU was a binary question on whether tourists preferred *ceteris paribus* a hotel with RES (or/and ESI) to one without. The WTP was a dichotomous choice question which asked whether tourists would choose *ceteris paribus* a hotel with RES (or/and ESI) if they had to pay extra money for it. The different question formats employed throughout are summarized in Table 1. In the case of respondents with zero WTP, a filter question was also asked to trace reasons behind their negative answer. The fourth part of the questionnaire aimed at retrieving respondent's socio economic data such as income, marital status, number of children, gender, age, education level and mother country. The most important findings of this research are presented in this paper.

2.2. Implementation of the research

2308 valid face to face interviews were conducted with passengers waiting at the terminals of the two international airports of the island: Chania and Heraklion. These airports operate domestic and international flights. From those questionnaires 865 were Version RES, 792 were Version ESI and 651 were Version RES and ESI. Respondents were asked to fill in one out of the three ran-

Table 1
Summary of the estimated binary models.

Model name	Description of dependent variable	Positive responses
WTU_{RES}	Would you prefer a hotel that has renewable energy sources to another one that does not have (same category, price and services)?	86%
WTU_{ESI}	Would you prefer a hotel that has systems of energy saving to another one that does not have (same category, price and services)?	87%
WTP_{RES}	Would you choose a hotel (same category & services) that has renewable energy sources if you had to pay extra?	75%
WTP_{ESI}	Would you choose a hotel (same category & services) that has systems of energy saving if you had to pay extra?	77%

Table 2
Statistics for accommodation in Crete ($n = 2308$).

	Cost of accommodation (€/d)	Duration of stay (d)	Annual stays in a hotel (d)	Stays for business (d)	Stays for holidays (d)	Holidays/business
Mean	101.20	9.84	14.97	2.49	12.49	0.94
Std. deviation	95.42	5.30	13.54	10.31	7.066	0.18
Minimum	10.00	1.00	1.00	0.00	0.00	0.00
25% percentile	50.00	7.00	7.00	0.00	7.00	1.00
Median	75.00	7.00	13.00	0.00	12.00	1.00
75% percentile	110.00	14.00	15.00	0.00	14.00	1.00
Maximum	1200.00	120.00	195.00	180.00	100.00	1.00

domly selected questionnaires. Questionnaires were scanned for inappropriate or inadequate completion and were accordingly left out. Respondents had stayed in hotels all over Crete and at the time of the survey were departing back home or for another destination. The interviews took place from May to August 2007. Interviews were held on different days and at different times so that we had samples from all airport departure gates to all possible destinations.

2.3. Data analysis considerations

Tourists came from a variety of countries characterized by various sociocultural and technology levels. This renders the coding of variables, with the same or equivalent meaning across countries, a very difficult task. Variables were recoded and/or were dummy coded for the analysis. Further to this, we had to look carefully into income and how to handle the country of origin as a variable. This was essential since the same amounts of money have different purchasing power across countries. Therefore, after reporting the actual income, respondents were also asked to classify themselves as low, middle or high income class (however, this variable was not statistically significant, in contrast to income stated as a monetary amount).

As far as the country of origin is concerned, we made a crude categorization of the 40 countries reported in this research into four energy awareness levels with “c1” being the category with the highest awareness level and “c4” the one with the lowest. For this *ad hoc* classification we employed published statistics and indices on power generation from renewables, energy intensity of an economy, energy consumption of various economy sectors, green house emissions, etc. [11,12].

3. Results and discussion

This section provides descriptive statistics and indices, factors affecting WTU and WTP for hotels with energy investments and gives insight into what makes tourists unwilling to pay for RES and ESI.

3.1. Descriptive statistics and indices

Crete provides a wide range of quality accommodation ranging from very basic to very luxurious units (Greek Ministry of Development, 2003). Concerning the hotel quality, with regards to number of stars, 2.2% of respondents stayed in 1 star, 14.6% in 2 star, 37.7% in 3 star, 33.1% in 4 star and 12.3% in 5 star hotels. Respondents' accommodation cost ranged from 10 to 1200€ per day, with a mean and median of 101.2€ and 75€, respectively. When a respondent stated a price for an “all inclusive holiday package”, we calculated the accommodation cost per day, based on other information provided (e.g. travel distance and duration of vacation). Mean and median duration of stay was reported at 9.84 and 7 days respectively. Additional statistics are reported in Table 2.

As aforementioned, despite respondents' coming from a variety of countries with various sociocultural and technological progress, we found it useful to also report their stated energy saving actions in their residence as shown in Table 3. This information might throw more light on tourists' energy behavior while staying at a hotel. If tourists are not energy thrift at home, neither would they be thrift during their holidays.

As regards tourists' actions related to energy saving at the hotels: one out of four tourists reported that they would not turn off lights when they were outside their room, and more than half would leave the air-conditioner on, during their absence. The findings of Table 4 indicate that unwise and inefficient energy behavior is quite high in most cases for respondents whilst on holidays. The reasons for

Table 3
Energy saving actions of tourists at their residence.

	Responses (%)
Use of economic program for dish-washer/cloth washing machine	44.4
Turning off lights when they are not needed	81.8
Rational use of air-conditioner (e.g. use in peak-off hours)	33.3
Close doors and windows while the air-conditioner/heating is on	60.6
Avoid leaving the appliances on stand-by mode (e.g. television)	50.6

Table 4
Energy saving actions of tourists at the hotel.

	Responses (%)
I turn off the television when I am not watching	67.9
Use the lights when necessary in the hotel	73.7
I turn off the lights when I am absent	76.3
I close doors and windows while the air condition/heating is on	68.0
I use the air-conditioner rationally (turning it off during my absence)	46.5

Table 5
Descriptive statistics of all significant variables.

Variable	Description of variable	Mean	Std. dev.
act1	Use of economic program for dish-washer/cloth washing machine in your residence: 0: No, 1: Yes	0.44	0.497
act2	Turning off lights when they are not needed in your residence: 0: No, 1: Yes	0.82	0.386
act3	Rational use of air conditioner (e.g. use in peak-off hours) in your residence: 0: No, 1: Yes	0.33	0.471
act4	Close doors and windows while the air condition/heating is on in your residence: 0: No, 1: Yes	0.61	0.489
act5	Avoid leaving the appliances on stand-by mode (e.g. television) in your residence: 0: No, 1: Yes	0.51	0.500
age	Age	34.53	13.045
c1[a]	Countries with very high level of energy awareness: CAN, ISL, JPN, DEN, SUI, SWE, NOR, FIN	0.12	0.319
c2	Countries with high level of energy awareness: GER, NED, AUT, LUX, USA	0.30	0.458
c3	Countries with medium level of energy awareness: POL, POR, SLO, AUS, BEL, CYP, CZE, ESP, FRA, ITA, GBR, ISR, GRE, IRL, MLT, NZL	0.55	0.498
chil	Have children: 0: No, 1: Yes	0.45	0.498
clim1	Do you believe that the climatic change is related to the consumption of fossil fuels? 0: No, 1: Yes	0.87	0.331
clim2	Do you believe that the climatic change can be slowed down with energy saving? 0: No, 1: Yes	0.86	0.345
clim3	Do you believe that the climatic change can be slowed down or even avoided with the use RES? 0: No, 1: Yes	0.85	0.356
costpd	Cost of accommodation per day	101.20	95.419
edu1[b]	Education level: 1: University, 0: Otherwise	0.62	0.485
edu2	Education level: 1: Higher school, 0: Otherwise	0.29	0.455
ensar	Energy saving should proceed any other action for producing more energy:. 0: No, 1: Yes	0.64	0.481
inco1[c]	Annual family income: 1: >70,000€, 0: Otherwise	0.16	0.363
inco2	Annual family income: 1: 42,001–70,000€, 0: Otherwise	0.31	0.461
inco3	Annual family income: 1: 21,001–42,000€, 0: Otherwise	0.33	0.471
infor1[d]	Well informed on renewable energy sources	0.52	0.500
infor2	Little informed on renewable energy sources	0.34	0.473
infos1[d]	Well informed on energy saving	0.62	0.484
infos2	Little informed on energy saving	0.25	0.434
pra2	Use the lights when necessary in the hotel: 0: No, 1: Yes	0.74	0.440
pra4	Close doors and windows while the air condition/heating is on in the hotel: 0: No, 1: Yes	0.68	0.467
save5	Use lamps of low consumption in your residence: 0: No, 1: Yes	0.54	0.498
sex	Gender: 0: Male. 1: Female	0.50	0.500

[a] Reference category, is a country with low level of energy awareness: Russia, Bulgaria, Croatia, Estonia, Hungary, Latvia, Lithuania, Turkey, Ukraine, FYROM, Romania.
[b] Reference category is "secondary or primary school graduate" but not more.
[c] Reference category, is family income less than 21,000€ per year.
[d] Reference category, is "not informed".

this could constitute topic for further research. It also indicates, the implementation necessity for special energy saving technologies which will deactivate air-conditioning units when windows are open and light sensors for human presence in hotel rooms. Additionally, information and awareness campaigns must be launched so that tourists focus on the "energy responsible" and "energy efficient" behavior during their vacation. Misconceptions, e.g. having the lights on, enhances security or/and there is a need for continuous operation of the air-conditioner in hot climates, have to be properly addressed and explained.

All variables used as explanatory variables in the models of Table 1, are described in Table 5, followed by their mean values and Standard Deviation. To be able to run the binary models original variables were recoded according to Table 5.

3.2. Factors affecting willingness to use and pay for hotels with energy investments

Apart from the high percentage of tourists being in favor of an environmental and energy friendly hotel, it is important to know the rationality of this decision, so that policy makers can adequately promote these conceptions, attitudes and characteristics. Exploratory variables with p-values less than 0.10, for the binary models of Tables 6 and 7, were considered. Binary logistic regression is used to model data when the dependent variable is dichotomous. Significant positive signed variables represent factors that make it more likely for tourists to accept RES (or ESI) and vise versa. The binary logistic models can calculate the probability of what the dependent variable expresses, in relation to significant independent variables. However, this is not what we wished to focus on. Our primary target was to investigate positive or negative effects of independent variables on the dependent ones. Explanatory variables have been grouped into 5 main categories: socioeconomic variables, information and awareness level, actions and practices, judgments and beliefs and venue characteristics.

Despite the high number of interviews, the sample encompasses a large variability in terms of country of origin and sociocultural differences. Hence coding variables in a discrete form is a difficult task.

3.2.1. Socioeconomic variables

Gender, education, income, age and parenthood are typical explanatory variables in valuation and/or public acceptance studies. Our sample consists of 50% females (sex), and it was found that women were more probable to select a hotel that has invested in RES and ESI compared to men ($\widehat{\beta} = 0.360$, $p = 0.029$ and $\widehat{\beta} = 0.307$, $p = 0.083$, respectively). Women also appear more probable to be willing to pay higher amounts for a room in a hotel that has invested in ESI ($\widehat{\beta} = 0.366$, $p = 0.007$) compared to men. This finding agrees with findings from other studies [13–16], but there are also studies in which males appear more willing to pay for energy related issues [17,18].

The mean age of our respondents was quite low, 34.5 years, because Cretan resorts are very popular destinations among young people, particularly for the night life (Malia and Cherssonisos resorts). Older people (age) appear less probable to pay for a hotel that has invested in RES ($\widehat{\beta} = -0.014$, $p = 0.044$) compared to younger people. This is an expected fact in accordance with other energy related studies [18,17,14].

Parents (chil) were only 45% of our sample, which is expected due to the low mean age. Respondents with children were more probable to select a hotel which has invested in RES and ESI ($\widehat{\beta} = 0.476$, $p = 0.004$; $\widehat{\beta} = 0.423$, $p = 0.019$ respectively). Also parents appeared more willing to pay for a hotel that has invested in ESI ($\widehat{\beta} = 0.527$, $p = 0.003$) compared to those without children.

Table 6
Estimated results for models WTU_{RES}, WTU_{ESI}.

Variables	Model WTU_{RES} (n = 1516)			Model WTU_{ESI} (n = 1443)		
	$\widehat{\beta}$	*Wald* x^2	p	$\widehat{\beta}$	*Wald* x^2	p
C	−2.220	19.904	<0.001	−2.854	30.328	<0.001
act1	0.360	4.222	0.040			
act2	0.368	3.732	0.053			
act3				0.539	6.395	0.011
act4	0.307	3.416	0.065			
act5				0.594	9.340	0.002
c1	0.912	4.509	0.034	0.950	5.013	0.025
c2	0.258	0.512	0.474	0.648	3.429	0.064
c3	0.706	4.015	0.045	0.834	5.975	0.015
chil	0.476	8.248	0.004	0.423	5.518	0.019
clim1				0.761	11.572	0.001
clim2	0.543	5.367	0.021	0.758	11.647	0.001
clim3	1.020	21.947	<0.001			
edu1	0.635	6.514	0.011	0.658	5.379	0.020
edu2	0.552	4.333	0.037	0.160	0.289	0.591
ensar	0.556	11.335	0.001	0.344	3.805	0.051
infor1	0.777	11.347	0.001			
infor2	0.185	0.640	0.424			
infos1				0.749	11.321	0.001
infos2				1.016	15.638	<0.001
pra2				0.484	6.758	0.009
pra4				0.476	6.851	0.009
save5				0.451	6.021	0.014
sex	0.360	4.779	0.029	0.307	3.012	0.083
Pseudo R^2	0.197			0.228		
−2 LL	1048.063			921.007		
Hosmer and Lemeshow Test	4.098	(df = 8)	0.848	9.455	(df = 8)	0.305
Overall predictive accuracy	86.7%			87.7%		

University and College graduates (edu1) accounted for 62% of the respondents, high school graduates (edu2) were 29%, while the remaining 9% were secondary school graduates. On average, the more educated a respondent was, the more probable he/she was to select a hotel with RES ($\widehat{\beta} = 0.635$, $p = 0.011$ and $\widehat{\beta} = 0.552$, $p = 0.037$ for edu1 and edu2 respectively). Furthermore, university graduates were also more probable to select a hotel with ESI ($\widehat{\beta} = 0.658$, $p = 0.020$) and willing to pay for it ($\widehat{\beta} = 0.418$, $p = 0.064$). The same

Table 7
Estimated results for models WTP_{RES} and WTP_{ESI}.

Variables	Model WTP_{RES} (n = 1516)			Model WTP_{ESI} (n = 1443)		
	$\widehat{\beta}$	*Wald* x^2	p	$\widehat{\beta}$	*Wald* x^2	p
C	−0.951	6.575	0.010	−1.417	9.273	0.002
act1				0.394	6.977	0.008
act3	0.380	7.542	0.006	0.477	9.013	0.003
act4				0.352	6.550	0.010
act5				0.448	9.681	0.002
age				−0.014	4.058	0.044
c1	0.612	2.977	0.084	0.623	3.054	0.081
c2	0.113	0.133	0.716	0.288	0.894	0.344
c3	0.142	0.225	0.635	0.062	0.045	0.833
chil				0.527	8.710	0.003
clim1				0.362	3.656	0.056
clim3	0.796	26.063	<0.001	0.483	7.361	0.007
costpd	0.002	4.954	0.026			
edu1				0.418	3.426	0.064
edu2				0.162	0.449	0.503
ensar	0.463	13.262	<0.001	0.334	6.006	0.014
inco1	0.338	2.456	0.117			
inco2	0.396	4.828	0.028			
inco3	0.167	0.990	0.320			
infor1	0.379	4.050	0.044			
infor2	0.096	0.244	0.621			
infos1				0.622	10.645	0.001
infos2				0.712	11.229	0.001
pra2	0.302	4.891	0.027	0.268	3.256	0.071
save5				−0.300	4.350	0.037
sex				0.366	7.359	0.007
Pseudo R^2	0.096			0.144		
−2 LL	1595.322			1428.024		
Hosmer and Lemeshow Test	5.703	(df = 8)	0.680	9.802	(df = 8)	0.279
Overall predictive accuracy	75.5%			76.9%		

sign effect of respondents with high education was also found by Zarnikau [17] and Wiser [14] for energy related studies.

Respondents of second upper class income categories (inco2: 42,000–70,000€) were more probable to be willing to pay for staying in a hotel with RES ($\widehat{\beta} = 0.396$, $p = 0.028$). Willingness to pay for RES by wealthier people is a common finding in almost all valuation studies [17,14,19,20,15]. It is noticeable that tourists of the first upper class income category (inco1) were not found to be willing to pay higher than those of low incomes. This could be explained by the heterogeneity of our sample. On the other hand, none of the income categories turned out to be statistically significant for paying for hotels with ESI. This can be attributed to the fact that basic ESI should have already been installed.

The above finding may motivate special awareness campaigns for energy saving in hotels visited by lower incomes or chosen by older people.

3.2.2. Information and awareness level

Respondents were asked how informed they were on ESI and RES. Well informed (infor1) and little informed (infor2) on RES claimed to be 52% and 34% of the respondents respectively, while the remaining 14% stated as not being informed. On the other hand, well informed (infos1) and little informed (infos2) on ESI claimed to be 62% and 25% of the respondents respectively, while the remaining 13% stated as not being informed. Noteworthy is the fact that the energy saving awareness levels are higher than those of RES. Well informed tourists on RES (infor1) were more probable to select a hotel with investments in RES ($\widehat{\beta} = 0.777$, $p = 0.001$) compared to little or not informed tourists. Well informed (infos1) and little informed (infos2) tourists on energy saving were more probable to select a hotel with ESI ($\widehat{\beta} = 0.749$, $p = 0.001$ and $\widehat{\beta} = 1.016$, $p < 0.001$, respectively) compared to those not informed. Well informed tourists on renewable energy (infor1) were more probable to pay more for their room in a hotel with RES ($\widehat{\beta} = 0.379$, $p = 0.044$) compared to those little informed (infor2) or not informed. Well and little informed tourists on ESI were more probable to be willing to pay more for a hotel with ESI ($\widehat{\beta} = 0.622$, $p = 0.001$ and $\widehat{\beta} = 0.712$, $p = 0.001$, respectively) compared to those not informed. High information level results in higher WTP for investments for RES, was also reported by Zarnikau [17].

This section can also consider the generic and "macro-awareness" level provided by a country as a whole. Our classification considered 4 groups of countries according to the awareness level. Respondents originating from countries with very high level of energy awareness (c1) constituted 12% of our sample. Respondents originating from countries with high level of energy awareness (c2) constituted 30% of the sample. Respondents originating from countries with medium level of energy awareness (c3) constituted 55% of the sample. The reference category was countries with a low energy awareness level which constituted the remaining 3% of our sample.

Tourists originating from countries with very high (c1) and medium (c3) energy awareness levels, were more probable to select a hotel with RES ($\widehat{\beta} = 0.912$, $p = 0.034$ and $\widehat{\beta} = 0.706$, $p = 0.045$, respectively) compared to those originating from low energy awareness level countries. This did not turn out to be true for those originating from high (c2) energy awareness level ($p = 0.474$) countries. Only those originating from very high energy awareness level countries (c1) were more probable to pay higher for a room in a hotel with RES ($\widehat{\beta} = 0.612$, $p = 0.084$) compared to those of low energy awareness level. Tourists from countries with low energy awareness were less probable to select a hotel with ESI compared to tourists from all other countries ($\widehat{\beta} = 0.950$, $p = 0.025$; $\widehat{\beta} = 0.648$, $p = 0.064$ and $\widehat{\beta} = 0.834$, $p = 0.015$ for c1, c2 and c3 respectively). Only those originating from very high energy awareness level countries (c1) were more probable to pay more for a room in a hotel with ESI ($\widehat{\beta} = 0.623$, $p = 0.081$) compared to those of low energy awareness level.

According to these findings, countries with a high energy awareness level have more energy responsible citizens. Although Dalton et al. [8] reported no major variation of the country of origin, they note the exception of American respondents who returned an approximately 30% less positive response than other nationalities for energy related issues.

3.2.3. Actions and practices

Several every-day actions and behaviors at home or when on holidays in another country identify one as an "energy responsible citizen". This section suggests that energy responsible behavior and perception may be reflected by the selection of an environmental/energy friendly lodging on holidays.

Starting with the behavior commentary; it was more probable for tourists to select a hotel with RES if they use the economical program for dish/cloth washing (act1: $\widehat{\beta} = 0.360$, $p = 0.040$) turn off the lights in their residence when they do not need to be on (act2: $\widehat{\beta} = 0.368$, $p = 0.053$) and close doors and windows while the air conditioning/heating is on in their residence (act 4: $\widehat{\beta} = 0.307$, $p = 0.065$). Those who did a rational use of their air-conditioner (act3) and those who avoided leaving the appliances on stand-by mode (act5) were more probable to select a hotel with ESI ($\widehat{\beta} = 0.539$, $p = 0.011$ and $\widehat{\beta} = 0.594$, $p = 0.002$, respectively).

Those who did a rational use of their air-conditioning unit (act3) were more probable to pay more for their accommodation with RES ($\widehat{\beta} = 0.380$, $p = 0.006$) compared to those who did not. Tourists who used the economical program for dish/cloth washing (act1), did a rational use of their air-conditioner (act3) used to close doors and windows while the air conditioning/heating was on in their residence (act 4) and avoided leaving the appliances on stand-by mode (act5) were more probable to be wiling to pay more for an energy saving hotel ($\widehat{\beta} = 0.394$, $p = 0.008$; $\widehat{\beta} = 0.477$, $p = 0.003$; $\widehat{\beta} = 0.352$, $p = 0.010$; $\widehat{\beta} = 0.448$, $p = 0.002$ for act1, act3, act4 and act 5 respectively).

Those who used the lights in the hotels, only when necessary (pra2) and those that closed doors and windows during their stay (pra4) were more probable to select a hotel with ESI ($\widehat{\beta} = 0.484$, $p = 0.009$ and $\widehat{\beta} = 0.476$, $p = 0.009$). In addition, those who used the lights in the hotels, only when necessary (pra2) they were more likely to be willing to pay for a hotel with RES and ESI ($\widehat{\beta} = 0.302$, $p = 0.027$ and $\widehat{\beta} = 0.268$, $p = 0.071$ respectively).

Those, who have invested in energy saving lamps in their residence (save5), were more probable to select a hotel with ESI ($\widehat{\beta} = 0.451$, $p = 0.014$). On the contrary, they were less willing to pay for hotels with ESI ($\widehat{\beta} = -0.300$, $p = 0.037$). This is an unexpected finding but could be explained by the fact that if the hotel has energy saving lamps, in the long run this should result in lower operation costs and thus no need for additional charges. Also, this can be attributed to the fact that basic ESI should have already been installed.

3.2.4. Judgments and beliefs

Tourists who believe that climate change is related to the consumption of fossil fuels (clim1) were more probable to select and pay for a hotel with ESI ($\widehat{\beta} = 0.761$, $p = 0.001$ and $\widehat{\beta} = 0.362$, $p = 0.056$, respectively). Those who believe that climate change can be slowed down with energy saving (clim2) were more probable to select a hotel with RES and ESI ($\widehat{\beta} = 0.543$, $p = 0.021$ and $\widehat{\beta} = 0.758$, $p = 0.001$, respectively). Those who believe that climate change can be mitigated or even eliminated with RES (clim3) were more probable to select a hotel with RES ($\widehat{\beta} = 1.020$, $p < 0.001$). They were also more probable to be willing to pay for hotels with RES and ESI ($\widehat{\beta} = 0.796$, $p < 0.001$ and $\widehat{\beta} = 0.483$, $p = 0.007$, respectively). These findings prove the interrelation and the firm link of climatic change

Table 8
Reasons for being reluctant to pay for ESI and RES.

Reason	ESI			RES		
	Frequency	Valid percent	Total percent	Frequency	Valid percent	Total percent
ESI/RES should already have been installed in the hotels with the money that I have already paid	231	68.1%	16.0%	228	61.1%	15.0%
I have no more money	55	16.2%	3.8%	75	20.1%	4.9%
I do not believe that the quality of environment will be improved if ESI/RES will be installed	21	6.2%	1.5%	36	9.7%	2.4%
It does not worth paying more because I do not appreciate the ESI/RES	15	4.4%	1.0%	14	3.8%	0.9%
Other	17	5.0%	1.2%	20	5.4%	1.3%
Sum	339	100.0%	23.5%	373	100.0%	24.6%
Willing to pay	1104		76.5%	1143		75.4%
Total	1443		100.0%	1516		100.0%

and environmental friendly energy in the mind of citizens, which is also confirmed in other studies [20,16,21,22]. Climate change, being the most serious environmental problem nowadays [23], has to be firmly linked with the promotion and implementation of rational energy use, energy saving and renewable energy sources.

Those who believe that energy saving should precede any other action for producing more energy (ensar), and thus can be said to have a high level of awareness, were more probable to select a hotel with RES and ESI ($\widehat{\beta} = 0.556$, $p = 0.001$ and $\widehat{\beta} = 0.344$, $p = 0.051$, respectively). In addition, they were more willing to pay for a hotel with RES and ESI ($\widehat{\beta} = 0.463$, $p < 0.001$ and $\widehat{\beta} = 0.334$, $p = 0.014$, respectively).

3.2.5. Venue characteristics

Those who paid more for their hotel accommodation (costpd) were willing to pay on average more for RES ($\widehat{\beta} = 0.002$, $p = 0.026$). This finding is expected as it is related to the respondent's welfare.

3.3. Reluctance to pay for RES and ESI

The majority of respondents, who were unwilling to pay for ESI and RES, believe that these technologies and related investments should have already been installed and used anyway and therefore included in the amount of money they had already paid for their hotel. All stated reasons for reluctance to pay for RES and ESI are presented in Table 8.

Many of those tourists know that they visit a "solar destination" country and therefore expect some common sense RES investments to be there.

4. Conclusions

This work shows that there was a very high percentage of tourists that would prefer hotels that have invested in ESI and RES: 87 and 86% respectively in favor of another without such technology. This is a very useful finding for hotel managers who wish to increase the attractiveness of their hotels and consequently their sales, since investing in RES and ESI would not only decrease their energy costs but would also increase their revenue as well as their environmentally friendly income of their hotel. Furthermore, tourists would pay higher prices for hotels that have invested in energy saving and renewable energy sources: 77 and 75% respectively. The amount he/she is willing to pay is an issue for further research, but nevertheless the above findings are consistent with previous research showing that tourists are willing to pay a reasonable amount of money for certain environmental measures to be taken [6]. Investments in ESI and RES by the hotel managers will be recovered from the increased number of customers and sales. Also, high income tourism will be attracted.

A major suggestion for hotels which have invested in energy efficient technology is to not only to have it in their "show window" to use it as a green marketing tool but also tourism operators and relevant policy makers to be convinced of the efficiency of this marketing strategy. Another suggestion for tourist organizations and tour operators is to evaluate, categorize, benchmark and control which hotels promote rational energy use, energy saving and renewable energy technologies and practices and attribute a certified green energy tag/flag. This is essential for "solar destinations" where the energy from the sun should be of prime importance.

Tourists from countries with high energy awareness, prove to be more willing to select and pay for hotels with ESI and RES. That is also why the Second International Conference on Climate Change and Tourism in Davos Switzerland (1–3 October 2008) addressed these challenges and analyzed the major opportunities of climate change and mitigation actions by the tourism sector (NWTO, 2002).

Acknowledgements

This work was financed by Interreg IIIC "Action program for Strengthening Energy Efficiency and Source Saving by Sustainable Local Development in European Regions (ENERCY REGIO)/Subproject: Practical Training in Companies", where Regional Energy Agency of Crete was a partner. The authors would also like to thank the Tourist police and the Management Authority of the Cretan airports for facilitating the interviewers entering the terminals and carrying out the interviews.

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